

MACHINE DESIGN

1967 ANNUAL INDEX

Volume 39—January to December

Including 26 regular issues of MACHINE DESIGN plus four special issues—*The Seals Reference Issue*, *The Fastening & Joining Reference Issue*, *The Mechanical Drives Reference Issue*, and *The Metals Reference Issue*. Only articles and editorial items one-half page or larger are indexed.

AUTHOR INDEX

A

- Adem, A. A.—“Controlling Universal-Motor Speed,” Jan. 5, p. 118
Agnoff, Charles—“Multipurpose Bearings,” Aug. 31, p. 98
Alexander, Alan G. and Cheng C. Ling—“Rotating Machine Elements,” Feb. 2, p. 137
Antonetti, V. W.—“Cooling Electronic-Packages,” Aug. 31, p. 122
Aronson, Robert—“Expo 67: A Painless Education,” July 6, p. 18
“Hot-Rod Armor,” Aug. 31, p. 21
Ashby, John D.—“Relay Switching and Counting,” Aug. 3, p. 122
Azzam, Hani T. and George Kitchen—“Realistic Friction Testing,” Mar. 16, p. 195

B

- Baeder, H. G.—“Radial Positive-Contact Seals,” *Seals Reference Issue*, Mar. 9, p. 6
Baer, John H. and William B. Duffy—“Self-Threading Nuts,” Apr. 27, p. 209
Barnes, Sam—“Air from Water,” Jan. 5, p. 110
“Drilling the Deep Six,” Mar. 30, p. 18
“Army Looks at Living Vehicles,” May 25, p. 18
“The Tide Turns for U. S. Fishermen,” June 22, p. 18
“Clothes That Clank,” Aug. 17, p. 28
“Daring Men in Flying Machines,” Oct. 12, p. 40
“The Arriving Age of Aquaculture,” Dec. 7, p. 21
Barrett, James J. and J. A. Merrill—“Extruding,” *Metals Reference Issue*, Dec. 14, p. 104
Barry, John K.—“Quick-Operating Fasteners,” *Fastening and Joining Reference Issue*, June 22, p. 103
Beach, John—“Coatings,” *Metals Reference Issue*, Dec. 14, p. 91
Beaudry, R.—“Soft Starting A-C Motors,” May 23, p. 171
Behrens, R. P. and B. E. Nye—“Liquid Springs,” June 8, p. 150
Belford, Richard B.—“Terminology,” *Fastening and Joining Reference Issue*, June 15, p. 4
Bennett, J. T.—“Dimensioning Castings,” Oct. 12, p. 195

- Benzer, William—“Low and Medium-Alloy Steels,” *Metals Reference Issue*, Dec. 14, p. 31
Beranek, Leo L.—“The Anatomy of Noise,” Sept. 14, p. 174
Berger, Richard T.—“Eccentrically Loaded Joints,” Aug. 17, p. 185
Bickford, John H.—“Mechanical Governors,” Apr. 13, p. 168
Blackmun, Edward, H. Rowe, and W. E. King—“Aluminum,” *Metals Reference Issue*, Dec. 14, p. 48
Bilis, Robert W.—“Hybrid Computers,” Oct. 26, p. 162
Bloedorn, William—“Field-Testing Techniques,” Nov. 23, p. 182
Borcina, David M.—“Soldering and Soldering Alloys,” *Fastening and Joining Reference Issue*, June 15, p. 117
Botstibler, D. W.—“Wear-Monitoring Systems,” Oct. 26, p. 170
Bowen, Robert F.—“Vacuum-Tight Welds,” June 8, p. 176
Braendel, Felix W.—“Pin Fasteners,” *Fastening and Joining Reference Issue*, June 15, p. 74
Brands, E. R. and J. J. Licari—“Organic Coatings,” May 25, p. 175
Bray, Andrew—“Matching Blowers To Load,” Aug. 31, p. 108
Brenner, Harry S.—“Fastener Evaluation,” *Fastening and Joining Reference Issue*, June 15, p. 28
Brickman, Arthur—“Rolamite,” Dec. 21, p. 110
Briggs, Charles W.—“Carbon and Low-Alloy Steels,” *Metals Reference Issue*, Dec. 14, p. 12
Buchert, James M. and Ronald P. Omberg—“Belleville Springs,” Aug. 3, p. 133
Bunk, Donald S. and Timothy J. Donovan—“Electromagnetic Shielding,” July 6, p. 102
Burkbank, O. Frank—“Forging,” *Metals Reference Issue*, Dec. 14, p. 101
Burgess, John A.—“How To Aggravate Your Boss,” Oct. 26, p. 158
Burnett, J. R.—“Packaged Adjustable-Speed Drives: Friction and Traction Drives,” *Mechanical Drives Reference Issue*, Sept. 21, p. 30

C

- Cahill, Robert F.—“When You Buy Outside V.E.,” Aug. 31, p. 84
Cain, Stan—“Controlling Hydraulic Valves: Comparing the Systems—Pneumatic,” July 20, p. 162
Carter, Maynard—“Stamping,” *Metals Reference Issue*, Dec. 14, p. 111
Casavin, John, Jr.—“Printed-Wiring Design,” Apr. 27, p. 213
“Printed-Wiring Projection,” Dec. 21, p. 102

Chelius, Jack—"Refractory Metals," *Metals Reference Issue*, Dec. 14, p. 85
Chung, Jackson—"Speed Reducers: Shaft-Mounted Reducers," *Mechanical Drives Reference Issue*, Sept. 21, p. 40
Clarke, Emerson—"Write It Like a Pro," Aug. 31, p. 90
Coryell, Avery E.—"The Design Process," Nov. 9, p. 154
Craig, W. D., Jr. and August J. Kwassek—"Instant Optimization for Springs," Sept. 28, p. 185
Crawshaw, S. L. and H. O. Kron—"Gears," *Mechanical Drives Reference Issue*, Sept. 21, p. 18

D

Daniels, Roger L.—"New Process Creates Superhard Parts," Aug. 17, p. 46
D'Aprix, Roger M.—"Obstacles to Professional Publication," Jan. 5, p. 106
"Communications Needs the Professional Touch," July 20, p. 147
Darr, F. M.—"Needle Roller Bearings," Mar. 30, p. 117
Davis, David K.—"Ceramic-to-Metal Joints," Jan. 5, p. 133
Decker, Fred—"Data Reduction Techniques," Nov. 23, p. 149
Doane, Norman H.—"Production Machines," June 22, p. 168
Dombeck, Edward K.—"Brakes: Mechanical Brakes," *Mechanical Drives Reference Issue*, Sept. 21, p. 53
Donovan, Timothy J. and Donald S. Bunk—"Electromagnetic Shielding," July 6, p. 102
Dreyfuss, Henry—"The Profile of Industrial Design," June 22, p. 156
Duffy, William B. and John H. Baer—"Self-Threading Nuts," Apr. 27, p. 209
Dunkle, Heber H.—"Metallic Gaskets: General Types," *Seals Reference Issue*, Mar. 9, p. 82
Durie, D. S. L.—"Keeping Light Beams on Target," Sept. 28, p. 128
Dyal, Elton—"Controlling Hydraulic Valves: Comparing the Systems—Hydraulic," July 20, p. 159

E

Eberly, Warren S.—"Electromagnetic Alloys," Feb. 2, p. 116
Ekstrom, Ralph E.—"Numerical Methods"
Lesson 1: "Power Series," Oct. 26, p. 197
Lesson 2: "Newton's Method," Nov. 9, p. 197
Lesson 3: "Matrix Algebra," Dec. 7, p. 183
Lesson 4: "Gauss Elimination Method," Dec. 21, p. 123
Elliott, Charles W., Jr.—"Environmental Testing Techniques," Nov. 23, p. 176
Erbin, E. F.—"Titanium," *Metals Reference Issue*, Dec. 14, p. 80
Esty, F. B.
"Engine Accessories: Part 1," July 6, p. 122
"Engine Accessories: Part 2," July 20, p. 169
Everett, Malcolm H. and Howard G. Gillette—"Molded Packings: Squeeze-Type," *Seals Reference Issue*, Mar. 9, p. 52

F

Farris, John A.—"Fluid System Filtration"
Part 1: "How Much and Where?," May 25, p. 163
Part 2: "Meeting System Requirements," June 8, p. 167
Frederick, Darrell D.—"Pressure-Vessel Closures," May 11, p. 183
Freeman, Thomas R.—"Bilge Rivets," *Fastening and Joining Reference Issue*, June 15, p. 83
Freund, C. J.—"Creativity Is a Task, Not a Trait," May 25, p. 161
Froemming, Donald and Werner J. Larsen—"Controlling Hydraulic Valves: Comparing the Systems—Solenoid," July 20, p. 154
Fulmer, Gary—"Rigid/Flexible Plastic Extrusions," July 20, p. 167
Furlani, Walter—"Business Machines," June 22, p. 173

G

Gactineau, R. L.—"Metallic Gaskets: O-Ring Types," *Seals Reference Issue*, Mar. 9, p. 90
Gattis, Murrah—"How Not To Succeed in Management," May 11, p. 137
Gillette, Howard G. and Malcolm H. Everett—"Molded Packings: Squeeze-Type," *Seals Reference Issue*, Mar. 9, p. 52
Glaser, Peter E.—"Cryogenic Insulations," Aug. 17, p. 146
Glotfelter, Hal C.—"Precision Potentiometers," May 11, p. 175
Graser, C. F.—"Consumer Products," June 22, p. 184
Grey, G. F.—"Resistance-Welded Fasteners," *Fastening and Joining Reference Issue*, June 15, p. 42
Grisaffe, Salvatore J.—"Thermal-Spray Coatings," July 20, p. 174
Gross, William H. and J. D. Hanawalt—"Magnesium," *Metals Reference Issue*, Dec. 14, p. 73
Grundtner, Robert R.—"Couplings," *Mechanical Drives Reference Issue*, Sept. 21, p. 59
Guerster, Rene and Frank A. Votta, Jr.—"Understanding Combination Springs," Nov. 9, p. 185
Guggemos, Dean and Peter Walker—"Overloading Instrument Motors," Apr. 13, p. 179

H

Hall, A. M.
"Ultrahigh-Strength Steels," *Metals Reference Issue*, Dec. 14, p. 44
"Nickel," *Metals Reference Issue*, Dec. 14, p. 65
Hanawalt, J. D. and William H. Gross—"Magnesium," *Metals Reference Issue*, Dec. 14, p. 73
Harding, J. P.—"The Deadly Bite of Puff, the Magic Dragon," Apr. 27, p. 44
Harper, Charles A.—"Electrical Insulating Materials," Sept. 28, p. 133
Harris, T. A.—"Predicting Bearing Performance," Aug. 17, p. 158
Harrison, Norman C.—"Clutches: Mechanical Clutches," *Mechanical Drives Reference Issue*, Sept. 21, p. 42

Haucke, Paul A.—"Terminal Blocks," Nov. 9, p. 190
Havlis, Jerome—"Cold Heading," *Metals Reference Issue*, Dec. 14, p. 109
Hawk, J. A.; Jr.—"Beryllium," *Metals Reference Issue*, Dec. 14, p. 83
Hayes, Frank O.—"Evaluating Engineers: The Case for Position Descriptions," July 6, p. 96
Hegedus, Alan K.—"Cost-Conscious Guide to Refractory Metals," Nov. 9, p. 169
Heine, Hans J.—"Malleable Iron," *Metals Reference Issue*, Dec. 14, p. 9
Herzl, George G.—"Instrument Suspensions," Jan. 19, p. 182
Hibberd, Robert G.—"Solid-State Electronics,"
Lesson 4: "The pn Junction," Jan. 5, p. 149
Lesson 5: "Junction Transistors," Jan. 19, p. 202
Lesson 6: "Transistor Ratings," Feb. 2, p. 122
Lesson 7: "Amplifier Circuits," Feb. 16, p. 220
Lesson 8: "Manufacturing Transistors," Mar. 2, p. 94
Lesson 9: "Compound Semiconductor Materials," Mar. 16, p. 186
Lesson 10: "Related Semiconductor Devices," Mar. 30, p. 127
Lesson 11: "Introduction to Integrated Circuits," Apr. 13, p. 185
Lesson 12: "Trends in Integrated Circuits," Apr. 27, p. 223
Hinkle, John W.—"Investment-Casting Design," Dec. 7, p. 148
Horvick, Ernest W.—"Zinc," *Metals Reference Issue*, Dec. 14, p. 77
Hurd, Donald D.—"Controlling Hydraulic Valves: Comparing the Systems—Proportional Electric," July 20, p. 157
Hurst, T. P.—"Washers," *Fastening and Joining Reference Issue*, June 15, p. 67

I

Ishit, Harold and Larry Shiller—"Cold Extruding," *Metals Reference Issue*, Dec. 14, p. 107
Isenbarger, Robert O.—"Exclusion Devices," *Seals Reference Issue*, Mar. 9, p. 11

J

Jacobson, Richard A.—"Are Information Systems Doing Their Jobs?," June 22, p. 40
Jaffe, M. I.—"Composite P/M Parts," Mar. 30, p. 123
Jagos, L. J.—"Fine-Edge Blanking," June 8, p. 163
Joerres, Robert E. and William R. Johnson—"Upgrading Spring Performance," Feb. 16, p. 210
Johnson, Alan—"High-Temperature, High-Strength, Iron-Based Alloys," *Metals Reference Issue*, Dec. 14, p. 39
Johnson, James E.—"Machine Elements and Servosystems," Apr. 27, p. 230
Johnson, Peter K.—"Powder Metallurgy," *Metals Reference Issue*, Dec. 14, p. 124
Johnson, William R. and Robert E. Joerres—"Upgrading Spring Performance," Feb. 16, p. 210

K

Kalika, Peter W.—"Can Technology Clear the Air?," July 20, p. 183
Kaplan, Kenneth—"Variable Ratios from Planetarys," Aug. 17, p. 183
Karlik, Robert F.—"Metallizing Ceramics," May 11, p. 160
Kattelmann, Harry R.—"Project Planning," July 20, p. 142
Keast, David N.—"Survey of Graphic Input Devices," Aug. 3, p. 114
Kemmerer, Jack B.—"Grand Prix of the Petite Planes," May 25, p. 26
Keskula, K. R.—"Roll Forming," *Metals Reference Issue*, Dec. 14, p. 117
Kilgore, Lee A.—"Any Engineer Can Be a Leader," Mar. 2, p. 82
King, W. E., Edward Blackmun, and H. Rowe—"Aluminum," *Metals Reference Issue*, Dec. 14, p. 48
Kirckendall, Ernest O.—"Carbon Steels," *Metals Reference Issue*, Dec. 14, p. 21
Kitchen, George and Hani T. Azzam—"Realistic Friction Testing," Mar. 18, p. 195
Koeber, T. H.—"Agricultural Equipment," June 22, p. 189
Kolb, Don J.—"Designing Plastic Parts for Ultrasonic Assembly," Mar. 16, p. 180
Kopecky, E. S.
"Stainless Steels," July 6, p. 127
"Stainless Steels," *Metals Reference Issue*, Dec. 14, p. 35
Kron, H. O. and S. L. Crawshaw—"Gears," *Mechanical Drives Reference Issue*, Sept. 21, p. 18
Kuchler, Theodore C.—"Clearance Seals," *Seals Reference Issue*, Mar. 9, p. 15
Kulju, Ken—"High-Strength Bolted Joints," May 25, p. 195
Kull, Francis R.—"Set Screws," *Fastening and Joining Reference Issue*, June 15, p. 36
Kwassek, August J. and W. D. Craig, Jr.—"Instant Optimization for Springs," Sept. 28, p. 185

L

Lacy, Howard—"High-Strength Structured Steels," *Metals Reference Issue*, Dec. 14, p. 27
Larsen, Werner J. and Donald Froemming—"Controlling Hydraulic Valves: Comparing the Systems—Solenoid," July 20, p. 154
Lavoie, Francis J.
"Peripheral Equipment for the Digital Computer," May 25, p. 154
"Packaged Adjustable-Speed Drives: Variable-Stroke Drives," *Mechanical Drives Reference Issue*, Sept. 21, p. 33
"Clutches: Fluid Couplings," *Mechanical Drives Reference Issue*, Sept. 21, p. 51
"Brakes: Electric Brakes," *Mechanical Drives Reference Issue*, Sept. 21, p. 56
"Automatic Drafting," Dec. 21, p. 85
Lazarus, Maxwell—"Shock Testing," Oct. 12, p. 199
Lease, R. H. and J. J. Van Acker—"Organizing Creativity," June 22, p. 198
Lee, B. A.—"Industrial Equipment," June 22, p. 179
Lenke, Timothy—"Terminating Aluminum Conductors," Aug. 31, p. 117
Letham, Dary L.—"Fluidic System Design"
"13. Circuit Elements," Oct. 27, (1986) p. 162
"14. Circuit Subassemblies," Nov. 10, (1986) p. 210

- "15. Circuit Synthesis," Jan. 5, p. 124
 "16. Component Fabrication," Jan. 19, p. 215
 "17. Test Equipment," Feb. 2, p. 142
 "18. Hybrid Device," Feb. 16, p. 231
 "20. Application Circuits," Mar. 16, p. 201
 Licari, J. J. and E. R. Brands—"Organic Coatings," May 25, p. 175
 Ling, Cheng C. and Alan G. Alexander—"Rotating Machine Elements," Feb. 2, p. 137
 Little, Robert E.
 "How To Prevent Fatigue Failure"
 Part 1: "Decrease Stress," June 8, p. 154
 Part 2: "Increase Strength," July 6, p. 130
 "Bolted Joints: How Much Give?," Nov. 9, p. 173
 "Choosing the Right Fatigue Test," Dec. 7, p. 167
 Lofgren, Andrew G.—"True Position Tolerancing for Fixed Fasteners," May 11, p. 169
 Long, Melvin E.
 "Fluidic System Design—Part 19: Graphic Symbols," Mar. 2, p. 90
 "Controlling Hydraulic Valves: Rating the Key Factors," July 20, p. 152
 "Controlling Hydraulic Valves: Comparing the Systems—Fluidic," July 20, p. 165
 Lorwick, Robert R.—"Speed Reducers: Base-Mounted Reducers," Mechanical Drives Reference Issue, Sept. 21, p. 37
 Lunch, Robert—"Don't Make All of Them Write," Oct. 12, p. 173

M

- MacDonald, R. D.—"Miniature Hydraulic Power Units," Apr. 13, p. 175
 Malcolm, Glen—"Packaged Adjustable-Speed Drives: Belt and Chain Drives," Mechanical Drives Reference Issue, Sept. 21, p. 26
 Manzone, M. G.—"IR on a Budget," Nov. 9, p. 162
 Markhauser, Anthony W.—"Preloading Ball Screws," Mar. 16, p. 207
 Martinelli, J. A.—"Bending Without Breaking," July 20, p. 185
 Marvin, Philip
 "Spotting a Potential Engineering Manager," Feb. 16, p. 198
 "Evaluating Engineering Performance," Apr. 13, p. 152
 Mason, W. T. and E. C. Sundberg—"Stepped Aluminum Extrusions," Dec. 21, p. 118
 Massey, Paul D.—"Captive or Self-Retaining Nuts: Clinch Nuts," Fastening and Joining Reference Issue, June 15, p. 58
 Mathews, Al and G. R. McKillop—"Compression Packings," Seals Reference Issue, Mar. 9, p. 39
 McClurg, James—"Deep Drawing," Metals Reference Issue, Dec. 14, p. 113
 McCormick, H. E.—"Retaining Rings: Spiral-Wound Retaining Rings," Fastening and Joining Reference Issue, June 15, p. 98
 McGee, William R.—"Precious Metals," Metals Reference Issue, Dec. 14, p. 89
 McKillop, G. R. and Al Mathews—"Compression Packings," Seals Reference Issue, Mar. 9, p. 39
 Merrill, J. A. and James J. Barrett—"Extruding," Metals Reference Issue, Dec. 14, p. 104
 Mihaly, Michael—"Captive or Self-Retaining Nuts: Anchor Nuts," Fastening and Joining Reference Issue, June 15, p. 55
 Miller, O. E.—"Retaining Rings: Wire-Formed Retaining Rings," Fastening and Joining Reference Issue, June 15, p. 95.

N

- Nachtman, Elliot S.—"Free-Machining Steels," Metals Reference Issue, Dec. 14, p. 46
 Neu, C. Y.—"Prestograph," May 11, p. 187
 Noland, Michael C.—"High-Velocity Metalworking Processes," Aug. 17, p. 163
 North, R. A. and John A. Quimby—"Diaphragm Seals," Seals Reference Issue, Mar. 9, p. 60
 Nuernberger, Eldon L.—"V-Belts," Mechanical Drives Reference Issue, Sept. 21, p. 8
 Nyce, B. E. and R. P. Behrens—"Liquid Springs," June 8, p. 150
 Nyan, Lester—"Fighting Obsolescence," Dec. 21, p. 98

O

- Olafson, C. T.—"Machining," Metals Reference Issue, Dec. 14, p. 122
 Omborg, Ronald P. and James M. Buchert—"Belleville Springs," Aug. 3, p. 133
 Orcutt, Frederic—"Laboratory Testing Techniques," Nov. 23, p. 169
 Osgood, Carl C.—"Packaging With Foam," Nov. 9, p. 176

P

- Parmley, Robert O.—"Coupling Shafts with Retaining Rings," Jan. 19, p. 211
 Parsons, Stuart O., Joseph L. Seminara, and Richard J. Shavelson—"A Working Day on the Moon," Aug. 3, p. 28
 Pattee, H. E.—"Brazing and Brazing Alloys," Fastening and Joining Reference Issue, June 15, p. 113
 Pearce, Bert L.—"Chains," Mechanical Drives Reference Issue, Sept. 21, p. 4
 Pearson, J. W.—"Writing Is A Technical, Not Literary, Assignment," Feb. 2, p. 109
 Pech, Joseph F.—"Clutches: Electric Clutches," Mechanical Drives Reference Issue, Sept. 21, p. 46
 Peters, Warren E.—"Thin-Bearing Performance," Oct. 12, p. 176
 Petrus, Stephen and William L. Seitz
 "Single-Thread Engaging Nuts," Fastening and Joining Reference Issue, June 15, p. 52
 "Captive or Self-Retaining Nuts: Caged Nuts," Fastening and Joining Reference Issue, June 15, p. 57
 "Spring Clips," Fastening and Joining Reference Issue, June 15, p. 86
 Polak, W. T. and D. G. Thomas—"Constant-Frequency Springs," Aug. 3, p. 111

- Porter, G. and M. Sabanas—"Volunteers Get Stuck for Spinal-Motion Research," Oct. 12, p. 30
 Prill, William K.—"Low-Cost Servosystems," Oct. 26, p. 186
 Pritts, Bradley A.—"Big Bearings," Mar. 2, p. 109
 Pulos, Arthur J.—"The Meaning of Product Aesthetics," June 22, p. 162
 Pusatera, Edward J.—"Adjustment Potentiometers," Mar. 2, p. 104

Q

- Quimby, John A. and R. A. North—"Diaphragm Seals," Seals Reference Issue, Mar. 9, p. 60

R

- Ramrath, J. M.—"Shock Absorbers," Feb. 16, p. 217
 Raudepp, Eugene
 "Evaluation for Development," Jan. 19, p. 166
 "Engineer Turnover"
 Part 1: "Is the Grass Greener?," Feb. 16, p. 192
 Part 2: "Why Change Jobs?," Mar. 2, p. 78
 Part 3: "Causes of Discontent," Mar. 16, p. 166
 Part 4: "How To Keep the New Man," Mar. 30, p. 109
 "How To Sell Your Company on Campus," Apr. 27, p. 200
 "How To Brighten the Student Image of Engineering," May 11, p. 152
 "Therapy for Discontent," June 8, p. 144
 "Is Achievement Its Own Reward?," July 6, p. 101
 "Parallel Path Advancement—Method or Malarkey?," Aug. 17, p. 142
 "How Valuable Is a P.E. License?," Sept. 28, p. 118
 "Keeping Up-to-Date"
 Part 1: "The Learning Dropouts," Oct. 12, p. 168
 Part 2: "Management Approves—with Reservation," Oct. 26, p. 154
 "How to Work With the Fourth Estate," Dec. 7, p. 145
 Reinhart, G.—"Natural Frequency of Overhanging Beams," June 8, p. 179
 Riffenburg, Raymond E.—"Mechanical Systems," Sept. 14, p. 184
 Roehrich, Roland L.—"Torquing Stresses in Lubricated Bolts," June 8, p. 171
 Rossnagel, W. B.
 "Tactical Tips for Negotiating," Mar. 16, p. 171
 "Checklist for Project Engineers," Apr. 27, p. 207
 Rowe, H. W. E. King, and Edward Blackmun—"Aluminum," Metals Reference Issue, Dec. 14, p. 48
 Rudy, John F.—"Welding and Welding Alloys," Fastening and Joining Reference Issue, June 15, p. 106

S

- Sabanas, M. and G. Porter—"Volunteers Get Stuck for Spinal-Motion Research," Oct. 12, p. 30
 Savage, Michael—"Cam Sizing Simplified," Oct. 26, p. 181
 Schanck, James L.—"Stainless Steel Tubing," Apr. 27, p. 236
 Schrank, H. E.—"Parabolic Curve Generator," Aug. 3, p. 121
 Sedgwick, Robert K.—"A Diagram for Development," Dec. 7, p. 142
 Seitz, William L. and Stephen Petrus
 "Single-Thread Engaging Nuts," Fastening and Joining Reference Issue, June 15, p. 52
 "Captive or Self-Retaining Nuts: Caged Nuts," Fastening and Joining Reference Issue, June 15, p. 57
 "Spring Clips," Fastening and Joining Reference Issue, June 15, p. 86
 Seminara, Joseph L., Richard J. Shavelson, and Stuart O. Parsons—"A Working Day on the Moon," Aug. 3, p. 28
 Schaefer, E. A.—"High-Alloy Steels," Metals Reference Issue, Dec. 14, p. 16
 Shannon, John L., Jr.
 "Fracture Mechanics"
 Part 1: "The Search for Safety in Numbers," Sept. 28, p. 122
 Part 2: "Reducing Theory to Practice," Oct. 12, p. 188
 Sharpe, Louis H.—"Adhesives," Fastening and Joining Reference Issue, June 15, p. 120
 Shavelson, Richard J., Stuart O. Parsons, and Joseph L. Seminara—"A Working Day on the Moon," Aug. 3, p. 28
 Shepler, Paul R.—"Split-Ring Seals," Seals Reference Issue, Mar. 9, p. 18
 Shiller, Larry and Harold Isbit—"Cold Extruding," Metals Reference Issue, Dec. 14, p. 107
 Shipley, Eugene—"Gear Finishes," Dec. 7, p. 152
 Siegel, Martin J.—"High-Temperature Springs," Mar. 30, p. 113
 Simpson, Henry W.—"Essentials of a Measurement System," Nov. 23, p. 198
 Sinek, J. Clarke—"Attitudes Determine Good Product Design," Jan. 19, p. 172
 Singleton, Robert C.—"Arc-Welded Fasteners," Fastening and Joining Reference Issue, June 15, p. 45
 Smith, Edward A.—"Felt Radial Seals," Seals Reference Issue, Mar. 9, p. 4
 Smith, J. N.—"Molded Packings: Lip-Type," Seals Reference Issue, Mar. 9, p. 45
 Smith, Jerome F.—"Soldering and Soldering Alloys," Fastening and Joining Reference Issue, June 15, p. 117
 Smith, Terry C.—"Improve Your Engineering Communication," Feb. 2, p. 104
 Smoley, Earl M.—"Nonmetallic Gaskets," Seals Reference Issue, Mar. 9, p. 68
 Spector, Lee F.—"The Great Monster Hunt," Sept. 14, p. 44
 Sproule, Richard T.—"Ceramics for Ultrahigh Temperatures," Aug. 31, p. 93
 Stein, H. L.
 "Seals," Seals Reference Issue, Mar. 9, p. 93
 "Making Product Models," June 22, p. 193
 Stevers, Justus B.—"Axial Mechanical Seals: Metal Bellows Types," Seals Reference Issue, Mar. 9, p. 36
 Steward, John H.—"Captive or Self-Retaining Nuts: Self-Piercing Nuts," Fastening and Joining Reference Issue, June 15, p. 60
 Storch, George A.—"Spanning," Metals Reference Issue, Dec. 14, p. 115
 Strubell, G. C.—"Copper," Metals Reference Issue, Dec. 14, p. 58
 Sullivan, John—"Hydraulic Systems," Sept. 14, p. 210
 Sundberg, E. C. and W. T. Mason—"Stepped Aluminum Extrusions," Dec. 21, p. 118

T

- Tankus, Harry—"Axial Mechanical Seals: General Types," *Seals Reference Issue*, Mar. 9, p. 27
 Tao, D. C.—"Customized Motion," Oct. 12, p. 215
 Taschenberg, Ernest—"Circumferential Seals," *Seals Reference Issue*, Mar. 9, p. 24
 Thomas, D. G. and W. T. Polak—"Constant-Frequency Springs," Aug. 3, p. 111
 Tucker, William T.—"Technology in Turmoil"
 "Fluid Systems—The Modern Revival," Jan. 5, p. 137
 "The Future of Engineering—A New Social Involvement," Mar. 30, p. 94
 Tuttle, Stanley B.
 "Motion Amplifiers," Feb. 2, p. 131
 "Adjustment Mechanisms," Feb. 16, p. 227
 "Latch and Trip Mechanisms," Dec. 7, p. 179
 Tuxworth, Fred—"Inserts in Molded Rubber," Oct. 12, p. 185

V

- Van Acker, J. J. and R. H. Lease—"Organizing Creativity," June 22, p. 198
 Vanatt, Robert—"Short-Run Powder Metallurgy," Dec. 21, p. 108
 Vet, Maarten—"Vibration Analysis of Thin Rectangular Plates," Apr. 13, p. 193
 Viscio, Donald P.—"Inserts," *Fastening and Joining Reference Issue*, June 15, p. 63
 Votta, Frank A., Jr. and Rene Guerster—"Understanding Combination Springs," Nov. 9, p. 185

W

- Waddington, R. P.—"Packaged Adjustable-Speed Drives: Gear Drives," *Mechanical Drives Reference Issue*, Sept. 21, p. 24
 Wagner, D. P.—"Washers," *Fastening and Joining Reference Issue*, June 15, p. 67
 Walker, Peter and Dean Guggemos—"Overloading Instrument Motors," Apr. 13, p. 179
 Walker, William F.—"Air-Moving Systems," Sept. 14, p. 202
 Wallace, John—"Castings," *Metals Reference Issue*, Dec. 14, p. 97
 Walton, Charles F.—"Gray, Ductile, and High-Alloy Irons," *Metals Reference Issue*, Dec. 14, p. 4
 Wang, Ting-San—"Shear Stresses in Curved Beams," Dec. 7, p. 175

- Wells, Joseph W.—"Power Springs," Aug. 31, p. 113
 Williams, Sidney B.—"Approximating Roots," Sept. 28, p. 132
 Wirry, Henry J.—"Packaged Adjustable-Speed Drives: Torque Converters," *Mechanical Drives Reference Issue*, Sept. 21, p. 34

- Wise, Clare E.
 "Design for One Day," Mar. 16, p. 174
 "Technology Attacks Crime,"
 Part 1: "The Instant Cop," Apr. 13, p. 18
 Part 2: "Shotguns, Helicopters, and Money Sniffers," Apr. 27, p. 18
 "Mass Transit: A New Priority on People," June 8, p. 18
 "Industry in Orbit: First Factory Will Blast Off by Year 2000," June 8, p. 40
 "'68 Cars—Part 1," Sept. 14, p. 20
 "'68 Cars—Part 2," Sept. 28, p. 20
 "'Fastest Draw in the West,'" Oct. 26, p. 20
 "'The No-Money Society,'" Dec. 21, p. 20
 Wise, Clare E. and Nat Wood—"On To Mach 12," Mar. 2, p. 84
 Wood, Nat
 "Masters of Illusion—Part 1," Feb. 2, p. 110
 "Masters of Illusion—Part 2," Feb. 16, p. 202
 "Year of the Turbine?," May 11, p. 18
 "Autopsies on Airliners," Aug. 17, p. 18
 "Filling Up Jumbo," Oct. 12, p. 20
 "Factory in the Future," Nov. 9, p. 20
 "Progress of Plenty," Nov. 23, p. 21
 Wood, Nat and Clare E. Wise—"On To Mach 12," Mar. 2, p. 84
 Wood, O. Lew—"Proportional Fluidic Control," Aug. 3, p. 129
 Wright, Gerard C.—"How To Make Belts Track," May 11, p. 180
 Wurzel, Hugo—"Retaining Rings: Stamped Retaining Rings," *Fastening and Joining Reference Issue*, June 15, p. 92

Y

- Young, Gordon—"Planning and Implementing Test Programs," Nov. 23, p. 142

Z

- Zaiss, Joseph J.—"Flat Belts," *Mechanical Drives Reference Issue*, Sept. 21, p. 14
 Zambetti, Frank—"Flexible Shafts," *Mechanical Drives Reference Issue*, Sept. 21, p. 69
 Zawacki, Stanley T.—"Configuration Management," Aug. 3, p. 180
 Zernow, L.—"High-Velocity Forming," *Metals Reference Issue*, Dec. 14, p. 119

SUBJECT INDEX

Numbers preceding the column heads refer to the MACHINE DESIGN Subject Classification System (January 1964).

Editorial material in this section is classified according to the following system:

1	2	3	4	5
---	---	---	---	---

Controlling Universal-Motor Speed Adem 1/5 118 (6.0)

1. Title.
2. Author's last name (see Author Index for complete name). Departments in regular issues are denoted by the following code:

N/T	News/Trends
Scan	Scanning the Field for Ideas
DIA	Design in Action
DI	Design International
CD	Conference Digest
AD	Abstracts for Design

3. Date of issue, MACHINE DESIGN Reference Issues are denoted by the following code:

S	Seals (March 9)
F&J	Fastening & Joining (June 15)
MD	Mechanical Drives (September 21)
M	Metals (December 14)

4. Page Number.

5. Number of pages in article or editorial item.

Electrical and Electronic Drives, Controls and Systems

11. Electric Motors

Controlling Universal-Motor Speed	Adem	1/5 118 (6.0)
Soft Starting A-C Motors	Beaudry	5/25 171 (4.0)
Electrical Systems	Campbell	9/14 192 (8.0)
Three Small-Motor Developments	N/T	2/2 24 (0.7)
Mercury Unit Tests Its Stamina	N/T	8/8 16 (0.7)
Concentric Stators Provide Gearless Dual Speed	Scan	5/25 168 (1.0)
Modular Motor Cuts Air-Tool Down Time	DIA	11/23 50 (1.0)

12. Power Supplies

Realistic Materials Form MHD Generator That Produces 60-Hz Three-Phase Power	N/T	4/13 43 (0.7)
'Instant Recharge' Cuts Battery Downtime	N/T	5/25 12 (0.5)
Migrating Ions Indicate Gas Concentration	Scan	2/2 130 (1.0)
Dual Signal Nullifies Sensor Thermal Drift	Scan	7/20 182 (1.0)
Chopper Shifts Weak Radiation From Noise	Scan	10/26 178 (1.0)
Two-Way Scanner Checks for Blemished Bottles	DIA	1/5 32 (1.0)
Steel-Strip Booms Extend Solar Cell "Window Shade"	DIA	3/2 30 (2.0)
Batteries Are Important Gear for Modern Nimrod	DIA	3/16 53 (1.0)
Swedish Sub May Run On Fuel-Cell Power	DI	3/2 34 (1.0)
Kids Watch Fuel Cell in Action	DI	6/8 52 (0.5)
Fuel Cells for Small Subs	CD	5/25 198 (2.0)

13. Switches and Relays

Relay Switching and Counting	Ashby	8/3 122 (7.0)
Expanding-Tube Probe Senses Temperature Change	Scan	8/31 106 (0.5)
Magnetic Circuit Forms Contactless Switch	Scan	12/21 117 (0.5)
Mass-Produced Relays Promise Consistent Characteristics	DIA	12/7 48 (1.0)
Relay Reliability	CD	7/6 138 (3.0)

14. Instruments and Controls

Overloading Instrument Motors	Walker & Guggemos	4/13 179 (6.0)
Measuring Noise	Campbell	9/14 216 (9.0)
Portable Missile Warning System Unveiled	N/T	3/16 46 (0.5)
Pancake Pictures	N/T	9/14 14 (1.3)
Sculptured Voltage Accelerates Solenoid Pull-In	Scan	1/19 210 (0.6)
Magnetic Leak Triggers Tension Sensor	Scan	2/16 230 (0.5)
Bearing Differential Senses Shaft-Speed Variance	Scan	4/27 218 (1.0)
Residual Flux Latches Solenoid Second Solenoid Winding Smothers Transients	Scan	4/27 219 (0.6)
Dual Expansions Boost Actuator Sensitivity	Scan	5/11 187 (0.5)
Thermal Flow Patterns Reveal Hidden Defects	Scan	5/11 188 (0.5)
Electronic Tick-Tock Regulates Clock	Scan	5/25 169 (1.0)
Heat-Sensitive Circuit Infers CO Level	Scan	7/6 121 (1.0)
Thread Alignment Indicates Position Without Contact	Scan	8/3 109 (1.0)
Shuttling Magnet Controls Bell Striker	Scan	10/23 180 (1.0)
Shifting Encoder Discs Measure Torque	Scan	11/9 183 (0.5)
Winking Probe Indicates Fill Level	Scan	12/7 163 (1.0)
Shaft Voltage Indicates Shaft Twist	Scan	12/7 166 (0.5)
Thermosensitive Valve Forms Fluidic Thermostat	Scan	12/21 116 (1.0)

15. Circuit Components

Adjustment Potentiometers	Pusatera	3/2 104 (4.5)
Precision Potentiometers	Glotfelter	5/11 175 (5.0)
Basic Course in Solid-State Electronics: Lesson 4—The pn Junction	(Article)	1/5 149 (7.0)
Lesson 5—The Junction Transistor	(Article)	1/10 202 (8.0)
Lesson 6—Characteristics and Ratings of Transistors	(Article)	2/2 122 (8.0)
Lesson 7—Basic Transistor Amplifier Circuits	(Article)	2/10 220 (6.0)
Lesson 8—Manufacture and Testing of Transistors	(Article)	3/2 94 (8.0)
Lesson 9—Compound Semiconductor Materials	(Article)	3/16 186 (6.0)
Lesson 10—Related Semiconductor Devices	(Article)	3/30 126 (9.0)

Lesson 11—Introduction to Integrated Circuits	(Article)	4/13 185 (8.0)
Lesson 12—Trends in Integrated Circuits	(Article)	4/27 223 (7.0)
Laser Beam Carries a Message Economically	N/T	1/19 26 (0.8)
First Germanium Integrated Circuits Switch Faster Than Fastest Silicon	N/T	3/16 10 (0.6)
Overloaded Resistor Refuses To Burn	N/T	3/16 41 (0.7)
Future For Electronics: From 'C to LSI and IEC	N/T	3/16 44 (1.2)
Laser Is Studied As General-Purpose Eye Fixer	N/T	4/13 18 (0.7)
Time To Make Circuit Masks Is Reduced By 10:1	N/T	4/13 29 (1.0)
Rainbow Laser Creates Any IR Or Visible Wave	N/T	4/27 32 (0.5)
Laser Welding Succeeds As Production Tool	N/T	6/8 10 (0.6)
Sphere Beats Cylinder At Pumping A Laser	N/T	12/21 28 (0.5)
Astronaut Styles Feature Ready-to-Wear Instruments	DIA	1/19 30 (1.0)
Sensor Stabs Foul-Smelling Milk Bottles	DIA	1/19 34 (1.0)
Pneumatic Finger Checks For Machining Flaws	DIA	4/13 64 (0.5)
Rolling Ruler Feels For Road Dips	DIA	4/13 64 (0.5)
"Music Box" Feeders Convert Motion to Readout	DIA	4/27 64 (1.0)
High-g Shocks Don't Bother Precision Recorder	DIA	4/27 66 (1.0)
Air-Sampling Sensor Cuts Cost Of Frost-Free Freezer	DIA	8/17 59 (1.0)
"Thermometers" Show Production Goals	DIA	11/9 64 (1.0)
Integrated-Circuit Comparison	CD	8/31 128 (2.0)
Growing Pains in Microelectronics	CD	10/12 220 (5.0)
ICs For Autos	CD	12/7 186 (2.3)
An Evaluation of Suppression Techniques	AD	3/16 216 (1.0)

16. Connectors and Wiring

Printed-Wiring Design	Gavasin	4/27 213 (5.0)
Terminating Aluminum Conductors	Lemke	8/31 117 (5.0)
Terminal Blocks	Haucke	11/9 190 (6.0)
Printed-Wiring Protection	Cavasin	12/21 102 (6.0)
Cable Won't Walk Across Canted Capstan	DIA	5/25 55 (0.6)

17. General Components

Electromagnetic Alloys	Eberly	2/2 116 (6.0)
Electromagnetic Shielding	Bunk & Donovan	7/6 102 (16.0)
Cooling Electronic Packages	Antonetti	8/31 122 (5.0)
Electrical Insulating Materials	Harper	9/28 133 (30.0)
Low-Voltage Igniter Fires Any Cold Fuel Oil	N/T	3/2 22 (0.6)
Spinning Magnet Generates Push-Pull Motion	Scan	1/5 132 (0.5)
Electrostatic Squeeze Transmits Torque	Scan	2/2 108 (1.0)
Prismatic Viewer Finds Curve Tangent	Scan	3/30 121 (1.0)
Murals Dry In Microwave "Oven"	DIA	9/28 52 (0.6)
Magnetic Skids May Slow Super-Trains	DIA	10/26 52 (0.5)
Water Tanks Store Heat For Cold Spells	DIA	11/23 50 (0.5)

19. Systems, Drives, Assemblies

Controlling Universal-Motor Speed	Adem	1/5 118 (6.0)
Machine Elements and Servosystems	Johnson	4/27 236 (6.0)
Peripheral Equipment for the Digital Computer	Lavoie	5/25 154 (7.0)
Hybrid Computers	Bliss	10/26 162 (8.0)
Low-Cost Servosystems	Prill	10/26 186 (9.0)
Doctoring Machine Diagnoses Computers' Troubles	N/T	9/28 32 (0.7)
The Littlest Computer	N/T	10/26 26 (1.7)
Pulsed Laser Searches Computer's Memory	N/T	12/7 37 (0.6)
SCR Network Provides Total Motor Control	Scan	1/5 132 (0.5)
Leaf-Spring Sensor Regulates Stopper Flipper	Scan	1/5 136 (0.5)
Merry-Go-Round Mechanism Controls Fill Position	Scan	1/19 201 (1.0)
Oscillating Stators Create Slow Rotation	Scan	3/2 102 (1.0)
Batteries Are Important Gear for Modern Nimrod	DIA	3/16 54 (1.0)
Electromagnetic Packaging	CD	4/13 198 (2.8)
Putting N/C To Work	CD	6/8 182 (1.6)

Fluid Drives, Controls and Systems

22. Fluid Conditioners

Miniature Hydraulic Power Units	MacDonald	4/13 175	(4.0)
Pressure-Vessel Closures	Frederick	5/11 183	(4.0)
Fluid System Filtration:			
Part 1—How Much and Where?	Farris	5/25 163	(5.0)
Part 2—Meeting System Requirements	Farris	6/8 187	(4.0)
Simple Cooler Will Air Condition New Jet Transport	N/T	6/8 37	(0.6)
High-Speed Centrifuge Promises Multidose Vaccines	N/T	9/28 50	(1.0)
Helical Maze Stirs Fluids	Scan	7/20 183	(0.5)
Contamination in Hydraulic Systems	CD	10/26 200	(1.6)

Molded Packings:			
Lip-Type	Smith	S 3/9 45	(8.0)
Squeeze-Type	Everett & Gillette	S 3/9 52	(7.0)
Static O-Ring Seals	Everett & Gillette	S 3/9 65	(3.0)
Nonmetallic Gaskets:			
Joint and Gasket Design	Smoley	S 3/9 68	(6.5)
Gasket Materials and Forms	Smoley	S 3/9 74	(7.5)
Metallic Gaskets:			
General Types	Dunkle	S 3/9 82	(8.5)
O-Ring Types	Gastineau	S 3/9 90	(2.5)

23. Fluid Conductors

New Concept Creates Sexless Fluid Coupling	N/T	7/6 40	(1.0)
Dial-A-Squirt Sprinkler Waters Odd-Shaped Lawns	N/T	8/17 62	(2.0)
Wedged Eccentrics Form Threadless Fastener	Scan	7/20 183	(0.5)
Concentric Cyclones Strip Dust From Air	Scan	8/31 105	(1.0)
Airtight Coupling Allows Fill-And-Go "Copter Refueling	DIA	6/8 62	(1.0)
Electric Field "Bolts" Water From Photographic Film	DIA	8/3 44	(1.0)

24. Linear Devices

Diaphragm Seals	North & Quimby	S 3/9 60	(5.0)
Steady-State Input Shuffles Valve Spool	Scan	3/2 108	(0.5)
Cylinder-Port Valves Position Piston	Scan	6/8 161	(0.5)
Jointed Piston Forms Variable-Volume Pump	Scan	7/6 118	(1.0)
Telescoping Pistons Form Multifunction Actuator	Scan	8/3 108	(0.5)
Temperature-Sensitive Cylinder Maintains Wire Tension	Scan	8/17 155	(0.5)
Squeezed-Oil Release Pulses Piston	Scan	12/7 164	(1.0)

25. Rotary Devices

New Approach Keeps Pump Cool and Quiet	N/T	1/5 20	(0.7)
Shuttling Cavities Pump Fluid	Scan	2/16 201	(1.0)
Bimetal Sensor Varies Blower-Blade Bite	Scan	2/16 216	(1.0)
Orbiting Vector Drives Output Gear	Scan	3/16 192	(1.0)
Catapulting Vanes Accelerate Shaft Start-Up	Scan	3/19 193	(1.0)
Orbiting Piston Pumps Fluid	Scan	4/13 167	(1.0)
Centrifugal Oil Feed Grades Coupling Output	Scan	5/11 168	(1.0)
Inflatable Pouches Form Rotary Actuator	Scan	5/25 170	(0.6)
Spinning Cone Forms Moisture Homogenizer	Scan	7/6 119	(1.0)
Torque Differential Drives Motor	Scan	10/12 181	(0.5)
Compressor Moves Air With Wankel-Like Rotor	DIA	7/20 52	(1.0)

26. Seals, Packings, Gaskets

Felt Radial Seals	Smith	S 3/9 4	(2.0)
Radial Positive-Contact Seals	Baeder	S 3/9 6	(5.0)
Exclusion Devices	Isebarger	S 3/9 11	(4.0)
Clearance Seals	Kuchler	S 3/9 15	(3.0)
Split-Ring Seals	Shepler	S 3/9 18	(6.0)
Circumferential Seals	Taschenberg	S 3/9 24	(3.0)
Axial Mechanical Seals:			
General Types	Tankus	S 3/9 27	(9.5)
Metal-Bellows Type	Stevens	S 3/9 36	(2.3)
Compression Packings	Mathews & McKillop	S 3/9 39	(6.0)

27. Valves

Controlling Hydraulic Valves:			
Rating the Key Factors	Long	7/20 152	(2.0)
Comparing the Systems—Solenoid	Froemming & Larsen	7/20 154	(3.3)
Comparing the Systems—Proportional Electric	Hurd	7/20 157	(2.3)
Comparing the Systems—Hydraulic	Dyal	7/20 159	(2.9)
Comparing the Systems—Pneumatic	Cain	7/20 162	(2.5)
Comparing the Systems—Fluidic	Long	7/20 165	(2.0)
Rotating Ball Forms Air-to-Vacuum Lock	Scan	2/16 226	(1.0)
Sensor Gears Activate Flow-Ratio Servo	Scan	2/16 230	(0.5)
Piston Provides Programmed Push	Scan	3/30 122	(0.5)
Floating Magnet Signals Fluid Flow	Scan	4/13 166	(0.6)
Floating Piston Forms Metering Dispenser	Scan	7/20 154	(1.0)
Reversible Piston Blocks Pressure Transients	Scan	8/17 154	(0.5)
Nozzle Array Generates Invisible Shield	Scan	8/17 155	(0.5)
Grooved Cylinders Produce Variable Aperture	Scan	8/17 157	(0.5)
Wrap-Up Flap Controls Flow	Scan	10/26 179	(0.5)
Thermal Overtravel Spring Also Relieves Backpressure	Scan	11/9 184	(0.5)

28. Instruments and Controls

Technology in Turmoil:			
Fluid Systems—The Modern Revival.	Tucker	1/5 137	(12.0)
Fluidic System Design:			
Part 15—Circuit Synthesis	Letham	1/5 124	(7.0)
Part 16—Component Fabrication	Letham	1/19 215	(3.0)
Part 17—Test Equipment	Letham	2/2 142	(7.0)
Part 18—Hybrid Devices	Letham	2/16 231	(5.0)
Part 19—Graphic Symbols	Letham	3/2 90	(3.0)
Part 20—Application Circuits	Letham	3/16 201	(5.5)
Controlling Hydraulic Valves:			
Rating the Key Factors	Long	7/20 152	(2.0)
Comparing the Systems—Solenoid	Froemming & Larsen	7/20 154	(3.3)
Comparing the Systems—Proportional Electric	Hurd	7/20 157	(2.3)
Comparing the Systems—Hydraulic	Dyal	7/20 159	(2.9)
Comparing the Systems—Pneumatic	Cain	7/20 162	(2.5)
Comparing the Systems—Fluidic	Long	7/20 165	(2.0)
Proportional Fluidic Control	Wood	8/3 129	(4.0)
Flip-Flops Switch Without Power	N/T	1/5 24	(0.7)
New Package Cuts Size and Cost of Fluid Logics	N/T	5/11 30	(2.0)
Oscillating Vortex Indicates Flow Rates	Scan	1/5 117	(1.0)
Torque-Arm Variation Indicates Gas Density	Scan	8/17 153	(1.0)
Touch-Sensitive Bubble Forms Proximity Sensor	Scan	8/31 107	(1.0)
Demand-Sensitive Orifice Regulates Mix	Scan	9/28 184	(1.0)
Spherical Piston Regulates Pressure	Scan	10/12 183	(1.0)
Rocking Rings Detect Surface Tension	Scan	11/9 182	(1.0)
Integrated-Circuit Comparison	CD	8/31 128	(2.0)
Liquid Fluidics—Problems and Potential	CD	9/28 170	(2.0)

29. Systems and Assemblies

Hydraulic Systems	Sullivan	9/14 210	(6.0)
First Hydrostatic Farm Tractor Set For Mass Production	N/T	6/8 26	(2.0)
New Lubricant Test Draws Map of What's Wrong	N/T	11/23 37	(0.7)
Mammoth Aerosols Spurt Multitude of Products	DIA	3/16 52	(1.0)

Mechanical Drives, Controls and Systems

31. Engines, Atomic Power, Power Sources

Engine Accessories:			
Part 1	Esty	7/6 122	(5.0)
Part 2	Esty	7/20 169	(5.0)
Isotopes in Exhaust Gases Tattle on Oil-Burning Auto Engines	N/T	1/19 10	(0.7)
Rocket Cluster Shapes Booster Plume	N/T	2/2 12	(0.6)
Solid-Solid Rocket Starts/Stops/Reignites	N/T	2/16 21	(0.7)
Turbine Cuts Tank-Engine's Weight In Half	N/T	3/30 14	(0.7)
Engine Holds Body On New Lotus-Ford	N/T	6/22 14	(2.0)
Ford Previews Pollution Controls For '68	N/T	8/3 12	(1.0)
New Turbine Borrowed Best From Two Cycles	N/T	9/14 12	(0.6)
Nuclear-Electric Power—Best Bet For Extended Space Flights	N/T	9/14 41	(0.5)
Plasma Propulsion Proves Practical	N/T	10/12 57	(0.7)
Combustion Engine Called Best For Dives To The Ocean Bottom	N/T	10/12 58	(0.5)
Complete Controllability Claimed for Rocket	N/T	10/26 32	(0.6)
TF-41 Jet-Engine Program Is Ahead Of Schedule	N/T	11/9 32	(0.6)
Rankine Cycle Bids For Electrical Work	N/T	12/7 12	(0.5)
Gasoline Engines Will Meet Pollution Standards	N/T	12/7 60	(0.6)
Computerized Fuel Injection Cuts Emission, Boosts MPG	DIA	11/9 61	(1.0)
Diesel Offers 4,000-HP Per Cylinder	DI	9/14 35	(0.5)

Needle Roller Bearings	Darr	3/30 117	(3.0)
Predicting Bearing Performance	Harris	8/17 158	(5.0)
Multipurpose Bearings	Agnoff	8/31 98	(6.0)
Matching Blowers To Load	Bray	8/31 108	(5.0)
Air-Moving Systems	Walker & Conniff	9/14 202	(7.0)

Clutches:			
Mechanical Clutches	Harrison	MD 9/21 42	(4.6)
Electric Clutches	Pech	MD 9/21 46	(4.4)
Fluid Couplings	Lavoie	MD 9/21 51	(2.0)

Brakes:			
Mechanical Brakes	Dombeck	MD 9/21 53	(3.7)
Electric Brakes	Lavoie	MD 9/21 56	(2.3)

Couplings	Grundtner	MD 9/21 59	(6.0)
Flexible Shafts	Zambetti	MD 9/21 69	(3.0)
Thin-Bearing Performance	Peters	10/12 176	(4.0)
Universal Joints	(Chapter)	MD 9/21 65	(4.0)

Five Years of Tests Weigh the Way Bearing	N/T	2/16 50	(2.0)
Brake Control Prevents Jackknifes And Skids	N/T	12/7 28	(2.0)
Toggle-Expanded Hub Locks Reel	Scan	1/5 131	(1.0)

Orbiting Knuckles Form Constant-Velocity Joint	Scan	1/19 181	(1.0)
Drive Torque Controls Brake	Scan	3/2 93	(0.6)
Coil Spring Forms Resilient Shaft Bearing	Scan	3/16 194	(1.0)
Viscous Churn Brakes Roller	Scan	3/16 206	(0.5)
Annular Spring Forms Resilient Coupling	Scan	4/13 165	(1.0)
Wear-Sensing Ratchet Offsets Brake Decay	Scan	4/27 220	(1.0)

Brake-Clutch Arrangement Forms Torque Switch	Scan	6/8 162	(1.0)
Clutch Servo Maintains Constant Torque Output	Scan	8/17 156	(1.0)
Piggyback Bearing Cuts Ball Speed	Scan	8/31 106	(0.5)
Inertial Clamp Actuates Clutch	Scan	9/28 169	(0.6)
Inclined-Cable Trolley Brakes Itself	Scan	10/12 181	(0.5)
Shifting Mass Governs Clutch Output Speed	Scan	12/21 114	(1.0)

Lawn Mower Clutch Made from Die-Cast Components	DIA	1/5 40	(0.5)
Clutch Control Assists Invalid Drivers	DIA	1/5 42	(0.5)
Air-Bearing Rotor Boosts Accelerometer Sensitivity	DIA	2/2 38	(0.5)
Dash Light Warns of Unsafe Brakes	DIA	2/2 38	(0.5)
Log-Dragging Rig Relies on Interlocked Winches	DIA	11/9 56	(1.0)
Snowless Skiing Scheme	DI	6/22 37	(0.7)

32-34. Drives, Transmissions, Drive Components

Speed Reducers:			
Base-Mounted Reducers	Lorwick	MD 9/21 37	(3.5)
Shaft-Mounted Reducers	Chung	MD 9/21 40	(1.5)
Lopsided Rollers Form Random-Drive Conveyor	Scan	3/30 122	(0.5)
Spring-Belted Pulleys Tighten Tape	Scan	11/9 183	(0.5)
Packaged Adjustable-Speed Drives:			
Gear Drives	Waddington	MD 9/21 24	(2.7)
Belt and Chain Drives	Malcolm	MD 9/21 26	(3.3)
Friction and Traction Drives	Burnett	MD 9/21 30	(3.0)
Variable-Stroke Drives	Lavole	MD 9/21 33	(1.0)
Torque Converters	Wirry	MD 9/21 34	(3.0)
Tape-Drive Servo Steadies Windup Tension	Scan	2/2 141	(1.0)
How To Make Belts Track	Wright	5/11 180	(3.0)
Variable Ratios from Planetaries	Kaplan	8/17 183	(2.0)
Chains	Pearce	MD 9/21 4	(4.0)
V-Belts	Nuernberger	MD 9/21 8	(6.0)
Flat Belts	Zaiss	MD 9/21 14	(4.0)
Gears	Crawshaw & Kron	MD 9/21 18	(6.0)
Gear Failures	Shipley	12/7 152	(11.0)
Shifty Spiders Control Differential Lock	Scan	4/13 164	(1.0)
Sprung Collar Provides Shrink Fit	Scan	4/27 221	(1.0)
Errant Conveyor Powers Self-Correcting Mechanism	Scan	5/11 166	(1.0)
Differentially Driven Worms Provide Fine Feed	Scan	10/26 179	(0.5)
Tooth-Gripping Split Worm Eliminates Backlash	Scan	12/7 165	(0.5)
Vacuum Sucks-Up Conveyor-Belt Sag	Scan	12/21 115	(0.5)
Oscillating Lever Drives Pop-Up Trimmer	DIA	1/5 36	(1.0)
Toothed Tape Moves In Continuous Loop	DIA	3/16 56	(0.5)

36, 37. Mechanisms, Controls

Motion Amplifiers	Tuttle	2/2 131	(5.0)
Precise Adjustment	Tuttle	2/16 227	(3.0)
Power Springs	Wells	8/31 113	(3.0)
Customized Motions	Tao	10/12 215	(4.0)
Cam Sizing Simplified	Savage	10/26 181	(5.0)
Latch and Trip Mechanisms	Tuttle	12/7 179	(4.0)
Rolamite—What Makes It Tick?	Brickman	12/21 110	(4.0)
Rolamite	N/T	11/9 44	(4.0)
Space Mechanism Indicates Axial Load	Scan	1/5 136	(0.5)
Dovetailed Cam Shunts Reaction Force	Scan	2/2 136	(1.0)
Shutting Plate Modulates Dual-Output Rotation	Scan	6/8 160	(1.0)
Bidirectional Input Drives One-Way Ratchet	Scan	8/3 108	(0.5)
On-Off Pivots Control Motion-Converter Bogle Wheels Clamp Step-Drive Nulls	Scan	8/17 154	(0.5)
Dual-Motion Clamp Lifts and Tilts	Scan	10/12 180	(1.0)
Magnetic Latches Control Escapement	Scan	11/9 184	(0.5)
Clock Escapement Clicks Off Spaces	DIA	12/7 165	(0.5)
Soft Touch Reduces Secretary Fatigue	DIA	3/30 44	(1.0)
Time Flips By On Split-Card Clock	DIA	10/26 50	(2.0)
Mechanical Governors	DIA	12/21 40	(1.0)
Rotor Turns A Spacecraft	Bickford	4/13 168	(7.0)
Satellite Won't Wobble When Designed To Spin 'Wrong'	N/T	10/12 12	(0.5)
	N/T	11/23 14	(0.6)

35. Rotational Components

Coupling Shafts with Retaining Rings	Parmley	1/19 211	(4.0)
Big Bearings	Pritts	3/2 109	(16.0)
Preloading Ball Screws	Markhauser	3/16 207	(5.0)

Assembly Components

41-43. Fasteners, Springs, Misc.

Coupling Shafts with Retaining Rings	Parmley	1/19 211	(4.0)	T-Cup Holds Solids Only	N/T	11/9 36	(0.6)
Self-Threading Nuts	Baer & Duffy	4/27 209	(4.0)	Nut Cold-Forms Lock Washer	Scan	3/2 103	(1.0)
Terminology	Belford	F&J 6/15	4 (4.0)	Honeycomb Cluster Jams and Joins	Scan	4/27 222	(0.5)
Set Screws	Kull	F&J 6/15	36 (4.0)	Expanding Spring Tightens Anchor Bolt	Scan	5/11 167	(0.5)
Single-Thread Engaging Nuts	Seitz & Petrus	F&J 6/15	52 (3.0)	Thread Slot Vents Pressure	Scan	6/8 161	(0.5)
Captive or Self-Retaining Nuts:				Captive Disc Fastens Fabric	Scan	8/3 110	(0.5)
Anchor Nuts	Mikaly	F&J 6/15	55 (2.4)	Rolling Latch Ignores Gate Preload	Scan	8/31 104	(1.0)
Caged Nuts	Seitz & Petrus	F&J 6/15	57 (1.6)	Resilient Bushing Detunes Bolt Resonance	Scan	10/12 182	(1.0)
Clinch Nuts	Massey	F&J 6/15	58 (2.0)	Ball Complement Arrangement Quick-Release Bolt	Scan	12/21 117	(0.5)
Self-Piercing Nuts	Steward	F&J 6/15	60 (2.0)	Upgrading Spring Performance	Joerres & Johnson	2/16 210	(5.0)
Inserts	Viscio	F&J 6/15	63 (4.0)	Shock Absorbers	Ramrath	2/16 217	(3.0)
Washers	Hurst & Wagner	F&J 6/15	67 (3.0)	High-Temperature Springs	Siegei	3/30 113	(4.0)
Pin Fasteners	Braendel	F&J 6/15	74 (5.0)	Liquid Springs	Nye & Behrens	6/8 150	(4.0)
Blind Rivets	Freeman	F&J 6/15	83 (3.0)	Constant-Frequency Springs	Polak & Thomas	8/3 111	(3.0)
Spring Clips	Seitz & Petrus	F&J 6/15	86 (6.0)	Belleville Springs	Buchert & Omberg	8/3 133	(3.0)
Retaining Rings:				Mechanical Systems	Riffenburg	9/14 184	(5.0)
Stamped Retaining Rings	Wurzel	F&J 6/15	92 (3.5)	Instant Optimization for Springs	Craig & Kwassek	9/28 185	(4.4)
Wire-Formed Retaining Rings	Miller	F&J 6/15	95 (2.8)	Packaging With Foam	Osgood	11/9 176	(6.0)
Spiral-Wound Retaining Rings	McCormick	F&J 6/15	98 (4.6)	Understanding Combination Springs	Votta & Guerster	11/9 185	(5.0)
Quick-Operating Fasteners	Barry	F&J 6/15	103 (3.0)	Safety Column Collapses In A Crash	N/T	2/2 8	(0.8)
Inserts in Molded Rubber	Tuxworth	10/12 185	(3.0)	Flexing Rings Absorb Shaft Shock	Scan	3/30 120	(1.0)
Tapping Screws	(Chapter)	F&J 6/15	31 (5.0)	Squashed Coils Form Axial Spring	Scan	4/27 222	(0.5)
Locking Fasteners	(Chapter)	F&J 6/15	38 (4.0)	Auxiliary Rubber Track Softens Trolley Stop	Scan	5/25 170	(0.5)
Studs	(Chapter)	F&J 6/15	40 (2.0)	Cam Mechanism Tailors Spring-Squeeze Rate	Scan	8/3 107	(1.0)
Locking Fasteners	(Chapter)	F&J 6/15	48 (4.0)	Bumpers Go Squish—Not Crash	DIA	5/11 64	(1.0)
Sealing Fasteners	(Chapter)	F&J 6/15	70 (4.0)	What's Detroit Doing About Auto Theft?	N/T	6/8 30	(2.0)
Small Rivets	(Chapter)	F&J 6/15	79 (4.0)	Radials Begin To Roll	N/T	8/3 18	(3.0)
Coming: No Loose Nuts In Fords	N/T	3/30 16	(1.0)	Evolution Of Automobile Tires	N/T	8/3 22	(3.0)
				Piggyback Eccentrics Provide Variable Offset	Scan	2/16 215	(0.6)
				Sliding Slats Iron-Out Web Wrinkles	Scan	9/28 163	(1.0)

Materials

51, 52. Ferrous, Nonferrous Metals

Stainless Steel Tubing	Schanck	4/27 236	(3.0)
Stainless Steels	Kopecki	7/1 127	(3.0)
Gray, Ductile, and High-Alloy Irons	Walton	M 12/14	4 (5.0)
Malleable Iron	Heine	M 12/14	9 (3.0)
Carbon and Low-Alloy Steels	Briggs	M 12/14	12 (4.0)
High-Alloy Steels	Schoefer	M 12/14	16 (5.0)
Carbon Steels	Kirkendall	M 12/14	21 (6.0)
High-Strength Structural Steels	Lacy	M 12/14	27 (4.0)
Low and Medium-Alloy Steels	Benzier	M 12/14	31 (4.0)
Stainless Steels	Kopecki	M 12/14	35 (4.0)
High-Temperature, High-Strength, Iron-Based Alloys	Johnson	M 12/14	39 (5.0)
Ultrahigh-Strength Steels	Hall	M 12/14	44 (2.0)
Free-Machining Steels	Nachtman	M 12/14	46 (2.0)
Materials	(Chapter)	F&J 6/15	8 (5.0)
Cost-Conscious Guide to Refractory Metals	Hegedus	11/9 169	(4.0)
Aluminum	Rowe, King & Blackmun	M 12/14	48 (10.0)
Copper	Strubell	M 12/14	58 (7.0)
Nickel	Hall	M 12/14	65 (8.0)
Magnesium	Hanawalt & Gross	M 12/14	73 (4.0)
Zinc	Horwick	M 12/14	77 (3.0)
Titanium	Erbin	M 12/14	80 (3.0)
Beryllium	Hawk	M 12/14	82 (2.0)
Refractory Metals	Chelius	M 12/14	85 (4.0)
Precious Metals	McGee	M 12/14	89 (2.0)
Aluminum Casting	(Article)	4/13 155	(9.0)
Diffusion-Bonded Titanium Saves Weight	N/T	1/19 23	(0.5)
Cryoquenching Keeps Aluminum From Warping	N/T	5/25 38	(0.6)

53. Plastics

Rigid/Flexible Plastic Extrusions	Fulmer	7/20 167	(2.0)
Teflon Engine-Piston Rings Improve Sealing	N/T	2/2 32	(0.5)
New Teflon Too Hard and Durable	N/T	2/16 39	(0.5)
Cold Plastic Is Stamped Into Shape	N/T	5/11 46	(1.0)
Synthetic 'Shoe Leather' Improves Hydraulic Packings And Packing Cups	N/T	5/25 40	(0.7)
Fishing Line and 'Syrup' Make Up Waterless Waterfall	DIA	5/25 46	(0.6)
Foam-Filled Sandwich Material May Lead To Economical Plastic Car Bodies	DIA	8/3 42	(2.0)
The Future of Plated Plastics	CD	1/19 218	(1.7)
Progress in Reinforced Plastics	CD	3/16 212	(2.0)

55, 56. Joining Materials, Other Nonmetals

Adhesives for Aluminum	Earnest, Hovland & Minford	1/19 192	(9.0)
Sealants	Stein	S 3/9 93	(13.0)
Adhesives	Sharpe	F&J 6/15 120	(10.0)
Metallizing Ceramics	Karlak	5/11 160	(6.0)
Cryogenic Insulations	Glaser	8/17 146	(7.0)
Ceramics for Ultrahigh Temperatures	Sproule	8/31 93	(5.0)
Nuts, Bolts, and Bearings For 6,500 F	N/T	2/16 36	(0.8)
New Ceramic Rivals Steel In Tension	N/T	4/27 12	(0.7)
Air Pollutant Is Turned Into Useful Product	N/T	6/22 10	(0.6)
Down To The Sea In Spheres	N/T	7/6 14	(0.5)
Strong Crystals Are Grown To Any Length	N/T	11/23 10	(0.5)
Concrete-Block Wall Made from On-The-Spot Castings	DIA	10/26 52	(0.5)

57. Finishes, Coatings, Lubricants

Organic Coatings	Licari & Brands	5/25 175 (20.0)
Metalizing Ceramics	Karlak	5/11 160 (6.0)
Coatings	Beach	M 12/14 91 (6.0)
Finishes and Coatings	(Chapter)	F&J 6/15 13 (3.0)

New Polyimide Enamel Looks Like Porcelain	N/T	8/17 14 (0.5)
Wash-Away Zinc Protects Stainless-Clad Aluminum For Casting	N/T	9/14 16 (0.6)

58. Prefabricated Forms

Magnetic Probe Tests Computer-Memory Film	DIA	1/5 40 (0.5)
---	-----	--------------

Manufacturing Methods and Processes

61-63. Metals Casting, Shaping, Forming

Investment-Casting Design	Hinkle	12/7 148 (4.0)
Casting	Wallace	M 12/14 97 (4.0)
Roughening Die Castings Boosts Strength And Plataility	N/T	7/6 37 (0.7)
Forging	Burbank	M 12/14 101 (3.0)
Extruding	Merrill &	M 12/14 104 (3.0)
Cold Extruding	Barrett	M 12/14 107 (2.0)
Cold Heading	Shiller &	M 12/14 109 (2.0)
Powder Metallurgy	Ishit	M 12/14 124 (2.0)
Short-Run Powder Metallurgy	Havlis	12/21 108 (2.0)
Bubble Blowing Shapes Thin-Metal Parts	Vanatt	3/2 24 (0.7)
Metal Powders Gain Strength & Density	N/T	3/2 28 (0.7)
Atom Shaking Takes The Work Out of Metal Rolling	N/T	8/3 10 (0.5)
Tube Gets Big End Through Controlled Heat and Pressure	DIA	2/2 40 (1.0)
Fine-Edge Blanking	Jagos	6/8 163 (3.0)
High-Velocity Metalworking Processes	Noiland	8/17 163 (20.0)
Stamping	Carter	M 12/14 111 (2.0)
Deep Drawing	McClurg	M 12/14 113 (2.0)
Spinning	Storch	M 12/14 115 (2.0)
Roll Forming	Keska	M 12/14 117 (2.0)
High-Velocity Forming	Zernow	M 12/14 119 (3.0)

High-Strength Bolted Joints	Kulju	5/25 195 (2.6)
Vacuum-Tight Welds	Bowen	6/8 176 (3.0)
Resistance-Welded Fasteners	Grey	F&J 6/15 42 (3.0)
Arc-Welded Fasteners	Singleton	F&J 6/15 45 (3.0)
Welding and Welding Alloys	Rudy	F&J 6/15 106 (7.0)
Brazing and Braze Alloys	Pattee	F&J 6/15 113 (4.0)
Soldering and Soldering Alloys	Smith &	Borcina F&J 6/15 117 (3.0)
Joint Design	(Chapter)	F&J 6/15 16 (12.0)
Process Welds Closely Spaced Fins to Tubing	N/T	1/5 22 (0.5)
Steel Is Sculptured In New Sizes and Shapes	N/T	5/25 43 (0.5)
Evaluating Pulsed-Laser Welding	CD	12/21 126 (2.0)
Machining	Olofson	M 12/14 122 (2.0)
New Process Creates Superhard Parts	Daniels	8/17 46 (2.0)

64-66. Metals Joining, Removal, Treating

Ceramic-to-Metal Joints	Davis & de Give	1/5 133 (3.0)
-------------------------------	-----------------------	---------------

67, 68. Metals Finishing, Plastics Processes

Thermal-Spray Coatings	Grisaffe	7/20 174 (8.0)
Wear-Sleeve Life Is Boosted By 10:1 ..	N/T	2/16 38 (0.5)
Electrodeposits Strengthen Rocket Case	N/T	5/25 16 (0.5)
Any Metal Is Coated On Any Metal	N/T	7/20 12 (0.7)
Flame-Sprayed Ceramic Coatings	AD	4/27 280 (1.8)
Ultrasonic Assembly	Kolb	3/16 180 (6.0)
Stepped Aluminum Extrusions	Mason & Sundberg	12/21 118 (5.0)

Design Theory and Techniques

71-73. Mechanics, Strength of Materials and Parts

Rotating Machine Elements	Alexander & Ling	2/2 137 (4.0)
Vibration Analysis of Thin Rectangular Plates	Vet	4/13 193 (3.0)
Natural Frequency of Overhanging Beams	Reinert	6/8 179 (3.0)
The Anatomy of Noise	Beranek &	Miller 9/14 174 (10.0)
Shock Testing	Lazarus	10/12 199 (16.0)
Vibration (Not Heat) Stress Relieves Parts	N/T	4/13 58 (1.5)
Fiber Metal Kills Jets' High-Frequency Noise	N/T	11/9 12 (0.5)
GM Tunes Out Noise With 'Mechanical FM'	N/T	11/9 14 (1.3)
Rumbles Of Impending Disaster	N/T	12/7 50 (2.0)
Noise Notebook-1	N/T	9/14 189 (3.0)
Noise Notebook-2	N/T	9/14 200 (2.0)
Noise Notebook-3	N/T	9/14 209 (1.0)
Composite P/M Parts	Jaffe	3/30 123 (3.0)
How to Prevent Fatigue Failure:		
Part 1—Decrease Stress	Little	6/8 154 (6.0)
Part 2—Increase Strength	Little	7/6 130 (8.0)
Fracture Mechanics:		
Part 1—The Search for Safety in Numbers	Shannon	9/28 122 (6.0)
Part 2—Reducing Theory to Practice	Shannon	10/12 188 (7.0)
Choosing the Right Fatigue Test	Little	12/7 167 (8.0)
Torquing Stresses in Lubricated Bolts	Roehrich	6/8 171 (5.0)
Natural Frequency of Overhanging Beams	Reinert	6/8 179 (3.0)
Bending Without Breaking	Martinelli	7/20 185 (4.0)
Eccentrically Loaded Joints	Berger	8/17 185 (4.0)
Wear-Monitoring Systems	Botstibler	10/26 170 (7.0)
Bolted Joints: How Much Give?	Little	11/9 173 (3.0)
Shear Stresses in Curved Beams	Wang	12/7 175 (4.0)

Air from Water	Barnes	1/5 110 (7.0)
Technology Attacks Crime:		
Part 1—The Instant Cop	Wise	4/13 18 (6.0)
Part 2—Shotguns, Helicopters, and Money Sniffers	Wise	4/27 18 (6.0)
The Meaning of Product Aesthetics	Pulos	6/22 162 (6.0)
Industrial Equipment	Lee	6/22 179 (5.0)
Consumer Products	Graser	6/22 184 (5.0)
Agricultural Equipment	Koehler	6/22 189 (4.0)
Computer And Rocket Sled Show Auto Crashes The Same	N/T	2/16 12 (0.8)
Johnson Pressures Industry On Safety	N/T	3/16 8 (0.5)
'Chute-Testing Rocket Sled Ejects Dumbmies Into Gale	N/T	3/30 10 (0.5)
'Big-Brother' Shutterbug Plots Crash Antics of Humans	N/T	4/27 37 (0.7)
'Fire In The Spaceship' Loses Some Of Its Terror	N/T	9/14 10 (1.0)
Standards Bureau Outlines Its Car-Safety Thinking	N/T	9/14 61 (0.9)
'Canned Astronauts' Complete A Working Week On The Moon	N/T	9/28 16 (0.7)
Controlled-Crush Front Ends Protect Passengers In '68 Fords	N/T	10/12 37 (1.0)
Newest Crash-Test Dummy Breaks And Cuts Like People	N/T	12/21 30 (1.0)
Skier Puts On Boots Through Side Doors	DIA	3/30 42 (2.0)
F-111 Crew Module Plays Triple Role	DIA	9/14 65 (3.0)
Valve Introduces Child-Saving Seat	DI	8/17 37 (0.5)

75. Design Analysis and Synthesis

Vibration Analysis of Thin Rectangular Plates	Vet	4/13 193 (3.0)
---	-----------	----------------

True Position Tolerancing for Fixed Fasteners	Lofgren	5/11 169	(6.0)
Making Product Models	Stein	6/22 193	(5.0)
Survey of Graphic Input Devices	Keast	8/3 114	(7.0)
Parabolic Curve Generator	Schrank	8/3 121	(1.0)
Approximating Roots	Williams	9/23 132	(1.0)
Dimensioning Castings	Bennett	10/12 195	(4.0)
Basic Course in Numerical Methods:			
Lesson 1—Power Series	Ekstrom	10/26 195	(4.0)
Lesson 2—Newton's Method	Ekstrom	11/9 197	(3.0)
Lesson 3—Matrix Algebra	Ekstrom	12/7 183	(3.0)
Lesson 4—Gauss Elimination Method	Ekstrom	12/21 123	(2.0)
The Design Process	Coryell	11/9 154	(8.0)
Data Reduction Techniques	Decker	11/23 149	(7.0)
Engineer's Vocabulary Is Taught To Computers	N/T	2/16 47	(0.6)
'Solid' Holograms Of Designers' Ideas Are Produced By Computer	N/T	4/13 14	(0.6)
Computer Draws Tires and Molds	N/T	4/13 60	(0.5)
Console Replaces Sliderule As Engineer's Private Problem Solver	N/T	5/11 12	(0.5)
Electronic Wind Tunnel: Newest Tool For Airfoil Design	N/T	5/11 48	(0.5)
Time Sharing Isn't The Only Answer	N/T	5/11 57	(2.0)
Electron Beams Provide Instant Prints Of Computer-Generated Data	N/T	5/25 14	(0.6)
Doctors Train On Plastic Cadaver	N/T	7/6 42	(3.0)
Computer Generates 3D Pictures	N/T	9/14 56	(0.5)
3D Display Lets Armchair Spacemen Fly Real Moon Missions	N/T	9/28 41	(0.8)
Formal Design Review	CD	3/30 136	(2.3)
The Challenge of Change	CD	8/17 190	(3.3)

76. Basic Sciences

Army Looks At "Living" Vehicles	Barnes	5/25 18	(5.0)
Keeping Light Beams on Target	Durie	9/28 128	(4.0)
Volunteers Get Stuck For Spins! Motion Research	Savanas & Porter	10/12 30	(3.0)
'Interplanetary Billiards' May Propel Multiplanet Flybys	N/T	1/5 8	(0.7)
Going Metric—Britain's First Year	N/T	2/16 24	(1.0)
Wind-It-Yourself Kidney Cleans Blood In The Home	N/T	4/27 16	(0.6)
Back-Guarding Mirror Monitors All The Action	N/T	5/11 12	(0.5)
Electron Bullets Will Light The Heavens	N/T	5/11 60	(0.5)
Pigeon's Eye Is Duplicated by Electronics	N/T	5/25 14	(0.6)
Atomic Steam Engine Inside The Body May Power Artificial Heart	N/T	8/3 10	(0.5)
Bodies Await Reanimation In Cryogenic Capsules	DIA	3/16 48	(2.0)
Patient's Tongue "Tells" Mechanical Arm Where To Go	DIA	5/11 66	(2.0)
Physiology and Engineering	CD	2/16 236	(2.6)
Conquest of Inner Space	CD	5/11 191	(1.8)
Human Repair Parts	CD	8/3 136	(3.0)

77. Experimental, Advanced Design

Magnetic Modules	DI	1/19 37	(0.6)
Fastener Evaluation	Brenner	F&J 6/15 28	(3.0)

78. Environmental Design

Air from Water	Barnes	1/5 110	(7.0)
Drilling The Deep Six	Barnes	3/30 18	(6.0)
Industry in Orbit: First Factory Will Blast Off By Year 2000	Wise	6/8 40	(4.0)
Can Technology Clear The Air?	Kalika	7/20 18	(16.0)
A Working Day On The Moon	Seminara, Shavelson & Parsons	6/3 28	(3.0)
Clothes That Clank	Barnes	8/17 28	(4.0)
Farming The Sea . . . The Arriving Age Of Aquaculture	Barnes	12/7 20	(6.0)
'Underwater Hitchhiking' Will Hurry Deep Diver to Stricken Submarine	N/T	1/19 8	(1.0)
Sea Pressure Toughens Deepvein's Glass Nose	N/T	2/2 10	(0.5)
Pressure Living Speeds Salvage	N/T	2/2 19	(0.7)
Troubles Plagued Command Module 012	N/T	2/16 8	(2.0)
Lunar Lab Scours Moon's Surface	N/T	2/16 36	(0.7)
Space Workshop	N/T	3/2 14	(3.3)
Beneath The Ocean Floor	N/T	3/16 14	(2.3)
Apollo 204 Dangers	N/T	3/16 29	(1.3)
Sound Wav's Take Pictures Of Ocean Floor	N/T	3/30 10	(0.5)
Saturn V Makes Ready For the Moon	N/T	3/30 12	(0.5)
Scaled Saturn Speeds Separation Schedules	N/T	3/30 37	(0.5)
By Jupiter in '72	N/T	4/27 40	(4.0)
Oxygen Is Reclaimed In One-Step Salt Bath	N/T	5/11 14	(0.5)
Six Wheeler Suggested For Moon Trips	N/T	5/11 37	(0.7)
Underwater Taxi	N/T	5/11 40	(1.6)
Gemini's CO ₂ Killer Breathes New Life	N/T	5/11 48	(0.5)
Pilot Takes Controls When Moving Around Sub	N/T	5/25 10	(0.7)
Deep Quest Slides Down The Ways	N/T	6/8 12	(0.5)
Divers Work Four Days At 400 ft.	N/T	6/8 60	(0.8)
First Tests For Advanced Life-Support System	N/T	8/3 13	(0.7)
Flying Ice Machine Puts Private Planes Through Foulest Weather	N/T	8/17 16	(0.7)
High-Pressure Thinking Leads To Far-Out Tanking	N/T	8/31 14	(1.3)
Apoll 1/Saturn V Awaits "All-Up" Command	N/T	10/26 42	(4.0)
Old Booster Proposed As First 'Permanent' Moon Base	N/T	11/23 12	(0.6)
JPL Builds A Better Moltrap	N/T	11/23 53	(0.7)
'Vibrating' Spaceman Gets Weighed In Zero Gravity	N/T	12/7 10	(0.5)
Sandy Meteoroids May Have Deadly Cores Twisting Cats May Teach How To Maneuver In Zero G	N/T	12/7 32	(0.7)
Class Project Pioneers Magnetic Sub	N/T	12/21 10	(0.6)
Attack Sub Features More Automation, Smaller Crew	DIA	4/13 63	(1.0)
Corrosion Coatings for Ferrous Fasteners	DI	5/11 52	(0.6)
Corrosion Causes and Cures	CL	6/22 205	(2.7)
	CD	1/9 261	(4.3)

Engineering Management, Personal

81. Engineering Department Operations

Evaluation for Development	Raudsepp	1/19 166	(6.0)
Spotting a Potential Engineering Manager	Marvin	2/16 198	(3.0)
Engineer Turnover:			
Part 1—Is the Grass Really Greener..	Raudsepp	2/16 192	(6.0)
Part 2—Why Change Jobs?	Raudsepp	3/2 78	(4.0)
Part 3—Causes of Discontent	Raudsepp	3/16 166	(5.0)
Any Engineer Can Be a Leader	Kilgore	3/2 82	(2.0)
Engineer Turnover:			
Part 4—How To Keep the New Man..	Raudsepp	3/30 109	(4.0)
Evaluating Engineering Performance....	Marvin	4/13 152	(3.0)
How To Sell Your Company on Campus	Raudsepp	4/27 200	(6.0)
Checklist for Project Engineers	Rossnagel	4/27 206	(3.0)
How To Brighten the Student Image of Engineering	Raudsepp	5/11 152	(5.0)
How Not To Succeed in Management....	Gattis	5/11 157	(3.0)
Therapy for Discontent	Raudsepp	6/8 144	(6.0)
Evaluating Engineers: The Case for Position Descriptions	Raudsepp	7/20 142	(5.0)
Is Achievement Its Own Reward?	Hayes	7/6 96	(5.0)
Project Planning	Raudsepp	7/6 101	(1.0)
Communications Needs the Professional Touch	Kattelmann	7/20 142	(5.0)
Configuration Management.....	D'Aprix	7/20 147	(4.0)
Parallel Path Advancement—Method or Malarkey	Zawacki	8/3 100	(7.0)
When You Buy Outside V.E.	Raudsepp	8/17 142	(4.0)
Keeping Up-to-Date:	Cahill	8/31 84	(6.0)
Part 1—The Learning Dropouts	Raudsepp	10/12 168	(5.0)
Part 2—Management Approves—with Reservations	Raudsepp	10/26 154	(4.0)
Salaries Jump 5% for Starting Engineers	N/T	1/19 18	(0.5)
R&D Budgets Are Climbing But Leveling Why Do Engineering Students Drop Out? Brain Plane Hits Smaller Cities	N/T	2/2 10	(0.5)
Proposed Draft Law To Limit Student Deferments	N/T	2/16 32	(0.7)
	N/T	4/27 8	(0.5)
	N/T	6/22 8	(0.6)

Four Disturbing Days Train An Engineering Manager

Up, Up, And Away Go Engineering Salaries	N/T	7/20 8	(1.6)
Another Record-Breaking Recruiting Season Reported	N/T	8/17 8	(0.5)
Need For Technicians Rises	N/T	9/14 8	(0.7)
EIC's Salary Smorgasbord	N/T	10/26 8	(3.0)
Why Engineers Job Hop	N/T	12/21 8	(0.5)

82-84. New Products, Drafting, Testing

Attitudes Determine Good Product Design	Sinex	1/19 172	(2.0)
Technology in Turmoil: The Future of Engineering—A New Social Involvement	Tucker	3/30 94	(15.0)
Exp. 67: A Painless Education	Aronson	7/6 18	(7.0)
A Diagram for Development	Sedgwick	12/7 142	(3.0)
Designs For Relaxing Win Student Awards	N/T	7/20 47	(1.0)
Creating Successful New Products	CD	2/2 149	(3.0)
Build Your Own Spectrograph	Neou	5/11 187	(1.5)
Automatic Drafting	Lavoie	12/21 94	(8.0)
Selector Matches Length Of Copy And Original	DIA	6/8 64	(2.0)
Ammonia Vapor Transports and Develops Drawing Prints	DIA	11/9 66	(0.5)
Graphic Design by Computer	CD	1/5 158	(3.0)
Realistic Friction Testing	Kitchen & Azam	3/16 195	(6.0)
Planning and Implementing Test Programs	Young	11/23 142	(7.0)
Laboratory Testing Techniques	Orcutt	11/23 189	(7.0)
Environmental Testing Techniques	Elliott	11/23 176	(6.0)

Field-Testing Techniques	Bloedorn	11/23	182	(6.0)
New Tower 'Flies' Rotor For Double-Size Whirlybirds	N/T	5/11	14	(0.5)
Ice Machine Tests Hover Power Of Helicopters	N/T	5/11	60	(0.5)

85. Technical Information

Obstacles to Professional Publication	D'Aprix	1/5	106	(4.0)
You Can Improve Your Engineering Communications	Smith	2/2	104	(4.0)
Writing Is A Technical, Not Literary, Assignment	Pearson	2/2	109	(1.0)
The Challenge of Our Technology Stockpile	Douglas	3/16	218	(0.7)
Are Information Systems Doing Their Jobs?	Jacobson	6/22	40	(4.6)
Write It Like a Pro	Clarke	8/31	90	(3.0)
Don't Make All of Them Write	Lunch	10/12	173	(3.0)
IR on a Budget	Manzone	11/9	162	(7.0)
A Dictionary Of Instrumentation Terminology	(Article)	11/23	156	(13.0)
How To Work with the Fourth Estate	Raudsepp	12/7	145	(3.0)
Speedup in Information Transfer	CD	4/27	274	(3.3)
Our Changing Language	AD	7/20	189	(4.0)

87, 88. Personal, Professional, Outside Services

Masters of Illusion: Part 1	Wood	2/2	110	(6.0)
Masters of Illusion: Part 2	Wood	2/16	202	(8.0)
Tactical Tips for Negotiating Technology in Turmoil:	Rossnagel	3/16	171	(3.0)
The Future of Engineering—A New Social Involvement	Tucker	3/30	94	(15.0)
Creativity Is a Task, Not a Trait	Freund	5/25	161	(2.0)
Therapy for Discontent	Raudsepp	6/8	144	(6.0)
Expo 67: A Painless Education	Aronson	7/6	18	(7.0)
How Valuable Is a P.E. License?	Raudsepp	9/28	118	(4.0)
How to Aggravate Your Boss	Burgess	10/26	158	(4.0)
Fighting Obsolescence	Nypan	12/21	90	(4.0)
Design Show '67: Biggest Ever	N/T	4/13	32	(1.0)
Expo '67	N/T	4/27	62	(2.0)
Unions Would Save Engineers, Prof. Claims	N/T	5/11	8	(0.5)
Electricals To Bolt Engineers Joint Council	N/T	11/9	8	(0.6)
Whatever Became of the Class of '67?	N/T	11/23	8	(1.0)
Contest Draws Creative Response From Draftsmen	N/T	12/21	14	(1.3)
The Profile of Industrial Design	Dreyfuss	6/22	156	(8.0)
Organizing Creativity	Lease & Van Acker	6/22	198	(4.0)

Specific Machines and Equipment

911. Ordnance

Hot-Rod Armor	Aronson	8/31	20	(5.0)
Fastest Draw in the West	Wise	10/26	20	(4.0)
TOW Missile Is Tried by the Footsoldier	N/T	1/18	14	(0.6)
The Deadly Bite Of Puff, The Magic Dragon	N/T	4/27	44	(4.0)
Phoenix F-111's Kills Its Bird	N/T	4/27	57	(0.5)
Afterburner Tied To Its Tail Doubles Rocket's Range	N/T	9/28	10	(0.5)
Chaparral Kills Six Aircraft	N/T	10/26	10	(0.6)
New Battle Tank Beats Anything On Earth	N/T	11/9	10	(0.6)
Army's First Laser Trains Tank Gunners	N/T	11/9	54	(0.6)
Mobile Fort Will Put Down Riots	N/T	11/23	56	(2.0)
Low-Cost Research Rocket Readied	DI	9/14	35	(0.5)
Hardwood Floor For Tank Track	DI	11/23	40	(0.5)

912. Machinery

Toe Tide Turns For U. S. Fishermen	Barnes	6/22	18	(7.0)
Production Machines	Doane	6/22	168	(5.0)
Business Machines	Furlani	6/22	173	(6.0)
Filling Up Jumbo	Wood	10/12	21	(7.0)
Factory In The Forest	Wood	11/9	20	(7.0)
Progress Of Plenty	Wood	11/23	21	(10.0)
The No-Money Society	Wise	12/21	20	(6.0)
No-Hands Cargo Transfer Shuffles 400,000 lb Daily	N/T	4/13	46	(2.0)
Short-Line RR Hoists Nuclear Rockets	N/T	4/13	57	(0.5)
Tong Mechanism Grips To Suit	Scan	7/6	120	(1.0)
Revolving Cylinders Orient Random Feed Concentric Funnels Capture Fill Dust	Scan	8/3	110	(0.5)
Automated Conveyor Reduces Luggage Handling Snafu	Scan	8/17	157	(0.5)
Potato Chips Are Tasted With Electrostatic Salt	DIA	2/2	36	(1.0)
Graphen-Getter Flow Rids Rodent Menace	DIA	2/16	68	(0.5)
Sorter Puffs Away Off-Color Food	DIA	3/16	56	(0.5)
Cage-Like Gripping Head Maneuvers Pal-litzed Load	DIA	8/3	46	(0.5)
Sea Flow Buries Transatlantic Cable	DIA	8/17	54	(0.7)
Serpentine Belt Wrings Juice From Grapes	DIA	10/12	48	(3.0)
Wire-Twanging Spike Knocks Grapes From The Vine	DIA	11/23	44	(1.0)
Joy-Stick Control Guides Tree-Shaking Arm	DIA	11/23	46	(1.0)
Belts And Blotters To Clean Up Harbors	DIA	12/7	46	(1.0)
Big Fork Reaches With Four-Bar Linkage	DI	4/13	37	(1.0)
Driver Juggles Load To Keep Truck Stable	DI	5/25	34	(0.6)
Rejected Jet Powers Snow Melter	DI	8/17	40	(0.5)

913. Electrical Machinery

No-Tug Tape Transports	N/T	6/8	28	(1.0)
Go-Anywhere Extension Puts Your 'Phone In Your Pocket	N/T	7/20	14	(0.7)
Sea Plow Buries 'Phone Lines Out Of Fishing Boat's Reach	N/T	8/17	12	(0.5)
WESCON Awards	N/T	8/31	26	(2.0)
Motorola's Modular TV: Ten Circuits in Suitcase	N/T	9/14	54	(1.0)

Telephone Puts Color In Black-And-White TV

Monitor Transmits Data from Whirling Turbine Blades	DIA	1/5	42	(0.5)
Wives Take Over Appliance-Repair Chores	DIA	3/2	32	(1.0)
Split-Beam Beacon Guides Small-Ship Pilots	DIA	11/9	66	(0.5)
Miniature Jukebox Lets You Carry A Tune-In Stereo	DIA	12/7	44	(2.0)
Rivalry, High Cost, Mar Europe's Bidding Color-TV Network	DI	3/30	48	(1.0)

914. Transportation

The Giants Are Coming	Wise	1/19	174	(7.0)
On To Mach 12	Wise & Wood	3/2	84	(6.0)
Design for One Lay	Wise	3/16	174	(6.0)
Year of the Turbine?	Wood	5/11	19	(7.0)
Grand Prix Of The Petite Planes	Kemmerer	5/25	26	(4.0)
Mass Transit: A New Priority On People	Wise	6/8	18	(5.0)
Autopsies On Airliners	Wood	8/17	18	(7.0)
'68 Cars	Wise	9/14	20	(8.0)
'68 Cars	Wise	9/28	20	(7.0)
Daring Men In Flying Machines	Barnes	10/12	40	(4.0)
Racing GT Is Redesigned for U. S. Highways	N/T	1/5	10	(1.0)
New Mining Tool Grew Out of Steel Conference	N/T	1/5	14	(0.6)
100-mph Road Is Proposed for Highway-Safety Research	N/T	1/5	14	(0.7)
Light-Producing Diode Puts Sound on Home-Movie Film	N/T	1/5	27	(0.7)
Camera Watches Landing Through Runway Window	N/T	1/19	12	(0.7)
Dropping Cars Starts Roadside-Improvement Program	N/T	1/19	16	(0.8)
Harmless Accidents? Hard To Deliver, Says Detroit	N/T	2/2	14	(2.6)
'Flying Brick' Ready for Power	N/T	2/16	14	(2.3)
Lunar Pogo Stick Would Hop On A Gas Spring	N/T	2/16	29	(0.7)
Indoor Luxury For Outdoor People	N/T	3/16	22	(3.0)
Duck-Billed Simulator Makes Like Future Jets	N/T	4/13	10	(0.7)
The Electric Car: Anode Yanking Promises Quick Refueling	N/T	4/13	14	(0.7)
Aerospace Will Try Ship Designing	N/T	4/13	26	(1.0)
The Venerable Autogyro	N/T	4/13	40	(2.0)
Truck Bumper Stops Car Underrun	N/T	4/13	52	(0.7)
Cleve Raizes The Roof With Low Idea Car	N/T	4/27	10	(0.7)
Bahama 500	N/T	4/27	14	(1.3)
Wing Change Outfits X-15 For Mach 8	N/T	4/27	26	(0.5)
Electric Car Goes Into Production	N/T	4/27	28	(2.0)
LA Airport Goes Underground?	N/T	4/27	60	(0.5)
Ultimate Car-Safety Harness Still In Doubt	N/T	5/25	37	(0.8)
Dream Tractor Tackles Any Task	N/T	6/8	14	(1.3)
Production Engines Powered The Winners In Bahamas-500	N/T	6/22	32	(0.9)
Electric Car, Automated Roads Studied for Buffalo, N. Y.	N/T	7/6	10	(0.5)
"Snap-On" Jets Vary STOL Aircraft's Performance	N/T	7/6	12	(0.7)
Noise Nuisance May Cause Redesign Of Jet Engines	N/T	7/6	14	(0.5)
Indy Aftermath: Hot Controversy Over The Turbine	N/T	7/6	16	(0.6)

Rail-Hugging Ridge Runner	N/T	7/6 28 (1.0)	Lifeboat Passes "5-Minute Fry" Test	DI	11/23 41 (0.6)
Firefighting Tanker Dumps Lakes On Forests	N/T	8/17 10 (0.6)	Will It Be Cheap Enough?	DI	12/21 38 (0.5)
'Flying-Brick' Pilots Have Too Much To Do	N/T	8/31 12 (0.6)	Speed Up the Motor	CD	3/2 126 (3.0)
Catamaran Shields Its Instruments By Under-Third-Bow Mounting	N/T	9/28 10 (0.5)	Design Challenges of the SST	CD	9/14 226 (2.6)
'Short-Hop' Jet Will Carry 300 In Comfort	N/T	10/12 14 (0.5)			
'Life Raft' Skims On Air Cushion	N/T	10/12 16 (0.5)			
Compound Helicopter Hops Quicker Than Jets	N/T	10/26 14 (0.5)	Instrument Suspensions	Herzl Simpson	1/19 182 (10.0)
Can a Glider Girdle the Globe?	N/T	10/26 40 (2.0)	Essentials of a Measurement System ... Pictures Frozen Into Tape Give Air Force Instant Maps	N/T	11/23 188 (7.0)
Astronaut's Taxi Leaves Without Him	N/T	11/23 10 (0.5)	Load Cell—Newest Tool For Surgeons Sound Analyzer Pictures Exactly What Ear Hears	N/T	8/3 37 (1.0)
Consumer Amphibian Rides An Air Cushion	N/T	11/23 16 (0.5)	Fastest Happening Is Caught With a Mirror	N/T	9/14 58 (0.5)
Tracked First Stage Builds Rocket's Blastoff Speed	N/T	12/7 14 (0.6)	Fogged Crystal Indicates Dew Point	Scan	12/21 115 (0.5)
'Flying Gunboat' Makes Ready For War Air Sac's Take Load on Swamp-Travelling Truck	N/T	12/7 57 (0.5)	Reflected Grid Shows Wheel Misalignment	DIA	1/5 38 (1.0)
Water Isn't Enough Britons Ride The Waves On Water-Skimming Scooter	DIA	1/19 32 (1.0)	"Talking" Shoe Aids Research On Handicapped	DIA	8/3 46 (0.5)
Lugar-Like Gas Gun Goes Ping or Pow VTOL Researchers Try Slotted-Tube Rotor	DIA	2/2 42 (2.0)	Venetian-Blind Wing Proposed For V/STOL Aircraft	DIA	8/31 32 (0.6)
Pilot Can Escape From Sunken Aircraft Curveless Cargo Ships Come In 100 Varieties	DIA	2/16 64 (2.0)	Compact Camera Gets Compressed	DIA	9/28 48 (1.0)
Gummed-Up Boats Slip Through Water Evolution Of The Killer Copter	DIA	4/13 66 (2.0)	Miniature 35 Carries Big-Camera Conveniences	DI	2/2 34 (0.5)
Student Project Spawns Outrigger Speed Boat	DIA	5/11 68 (1.0)	Kids Learn Early With Teaching "Toy"	DI	8/3 34 (0.5)
Stow A Boat In The Closet	DIA	5/25 48 (2.0)			
Motel On Wheels	DIA	7/20 50 (1.0)			
Viggen Prototype Readied for Flight Test Front-Wheel Drive	DI	12/21 42 (1.0)	Lunar Drill Cuts 10-ft Deep When Leaned On By a Flyweight	N/T	1/5 19 (1.0)
Two Nation V/STOL Now Under Evaluation	DI	1/5 30 (0.6)	They Finally Built A Better Trap	DIA	8/31 30 (1.0)
New Bug Blasts Into '68 Market With Many Minuscule Modernizations	DI	2/2 34 (0.5)	European Toy Review	DI	12/7 40 (3.0)
Wankel Engine Gives Soaring Plane A Lift	DI	4/13 34 (0.5)			
Europe's Cars Get in Line with U. S. Safety Regulations	DI	7/6 32 (0.6)			
Collapsible Column	DI	9/28 44 (3.0)	Holy Oblivion! Is Batman Passe?	N/T	3/30 28 (3.0)
Roving Eyes	DI	10/12 61 (0.7)	The Great Monster Hunt	Spector	9/14 44 (5.0)
Canted Engine	DI	10/26 61 (1.0)			
Invisible Changeover	DI	10/26 64 (1.0)			
Renault Goes To The Races	DI	10/26 66 (1.0)			
	DI	10/26 68 (0.5)			
	DI	10/26 68 (0.5)			
	DI	11/9 69 (0.5)			

915. Instruments

Instrument Suspensions	Herzl Simpson	1/19 182 (10.0)
Essentials of a Measurement System ... Pictures Frozen Into Tape Give Air Force Instant Maps	N/T	11/23 188 (7.0)
Load Cell—Newest Tool For Surgeons Sound Analyzer Pictures Exactly What Ear Hears	N/T	8/3 37 (1.0)
Fastest Happening Is Caught With a Mirror	N/T	9/14 58 (0.5)
Fogged Crystal Indicates Dew Point	Scan	12/21 115 (0.5)
Reflected Grid Shows Wheel Misalignment	DIA	1/5 38 (1.0)
"Talking" Shoe Aids Research On Handicapped	DIA	8/3 46 (0.5)
Venetian-Blind Wing Proposed For V/STOL Aircraft	DIA	8/31 32 (0.6)
Compact Camera Gets Compressed	DIA	9/28 48 (1.0)
Miniature 35 Carries Big-Camera Conveniences	DI	2/2 34 (0.5)
Kids Learn Early With Teaching "Toy"	DI	8/3 34 (0.5)

916. Fabricated Metal Products

Lunar Drill Cuts 10-ft Deep When Leaned On By a Flyweight	N/T	1/5 19 (1.0)
They Finally Built A Better Trap	DIA	8/31 30 (1.0)
European Toy Review	DI	12/7 40 (3.0)

990. Miscellaneous

Holy Oblivion! Is Batman Passe?	N/T	3/30 28 (3.0)
The Great Monster Hunt	Spector	9/14 44 (5.0)



